

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 12-18 are pending in the present application. Claims 12, 13, and 15-18 are amended by the present response, and support for the amendments is found in the Applicants' specification at least at page 17, line 14 to page 18, line 19 and FIG. 1. Claims 1-11 were cancelled without prejudice or disclaimer in the Amendment under 37 C.F.R. § 1.114 filed October 21, 2004. It is respectfully submitted that no new matter is added by this amendment.

In the outstanding Office Action, Claims 12-16 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kanazawa, et al. (U.S. Patent No. 6,140,984, herein "Kanazawa") in view of Ryan, et al. (U.S. Patent No. 4,090,109, herein "Ryan"); Claims 12-16 were also rejected under 35 U.S.C. § 103(a) as unpatentable over Kanazawa in view of Nakayama, et al (U.S. Patent No. 3,881,129, herein "Nakayama"); and Claims 17 and 18 were objected to as being dependent upon a rejected base claim, but were indicated as allowable if rewritten to include all limitations of the base claim and any intervening claims.

Applicants thank Examiner Nguyen for the interview granted Applicants' representatives on January 11, 2005. During the interview, proposed amendments to Claims 12, 13, and 15-18; replacement FIG. 8; and new dependent Claim 19 were presented. Examiner Nguyen indicated the amendments would overcome the 35 U.S.C. § 103(a) rejection, replacement FIG. 8 was acceptable, new Claim 19 would be considered upon formal submission of a response to the outstanding Office Action. It is noted that the Applicants have decided against adding Claim 19 that was proposed during the interview.

IN THE DRAWINGS

The attached sheet of drawings includes changes to FIG. 8. This sheet, which includes FIG. 8, replaces the original sheet including FIG. 8.

Attachment: Replacement Sheet

Applicants also thank Examiner Nguyen for the early indication of allowable subject matter in Claims 17 and 18. However, since the Applicants believe amended Claim 12 patentably distinguishes over the cited references of record, Claims 17 and 18 have been maintained in dependent form.

Replacement FIG. 8 is submitted to correct a minor error and illustrates that “odd row electrodes Y_i of the n row electrodes Y_1 to Y_n are connected to an output terminal of the Y driver 151,” as recited on page 38, lines 10-15 of the Applicants’ specification. It is respectfully submitted that no new matter is added by replacement FIG. 8.

Briefly recapitulating amended Claim 12 is directed to a method for driving an AC plasma display panel that includes n scan electrodes extending in one direction, m address electrodes, each intersecting with the n scan electrodes, a plurality of sustain electrodes, and $n \times m$ discharge cells. As recited in amended Claim 12, “said plurality of sustain electrodes includes a first group connected to a first of two second connecting points and a second group connected to a second of said two second connecting points.” Further, the method for driving the above AC plasma display includes applying a prescribed voltage to one of n scan electrodes; applying another prescribed voltage in common to two of m address electrodes connected to one of $m/2$ first connecting points; “applying a first voltage to said first group; and applying a second voltage to said second group.” Therefore, a desired discharge is caused to select an ON state in a first of $n \times m$ discharge cells that corresponds to “said one of said n scan electrodes, a first of said two of said m address electrodes connected to said one of said $m/2$ first connecting points and one of said plurality of sustain electrodes of said first group to which said first voltage is applied.” Dependent Claims 13 and 15-18 are amended to further clarify the claimed invention.

In a non-limiting, exemplary embodiment, FIG. 1 illustrates a block diagram for a plasma display device to which Applicants' method may be applied including n scan electrodes ($X1$ to Xn), m address electrodes ($W1$ to Wm) each intersecting the n scan electrodes, and a plurality of sustain electrodes including a first group ($YL1$ to YLn) and a second group ($YR1$ to YRn), extending parallel to the n scan electrodes. The m address electrodes are connected to $m/2$ first connecting points, the first group ($YL1$ to YLn) is connected to a first of two second connecting points (the output of Y Driver 153) and the second group ($YR1$ to YRn) is connected to a second of two second connecting points (the output of Y Driver 154).

Further, FIG. 2 illustrates a timing chart of an exemplary embodiment of Applicants' method. A prescribed voltage (V_{ax1}) is applied to a scan electrode (X_i), another prescribed voltage (V_{aw1}) is applied in common to two of m address electrodes connected to one of the $m/2$ first connecting points (W_j and W_{m+1-j}), a first voltage (V_{ay1}) is applied to the first group ($YL1$ to YLn), and a second voltage (0) is applied to the second group ($YR1$ to YRn). Consequently, a desired discharge is caused to select an ON state only in a first of $n \times m$ discharge cells.

Kanazawa is directed to a method of operating a plasma display panel. In Kanazawa, the address discharge in the plasma display device is controlled such that a potential difference occurring across a discharge slit between first and second electrodes selected for display is smaller than a potential difference occurring across a non-discharge slit between a first and second electrode not selected for display.¹ However, Kanazawa does not teach or suggest that a plurality of sustain electrodes "includes a first group connected to a first of two second connecting points and a second group connected to a second of said two second connecting points," as recited

¹ Kanazawa, Abstract.

in amended Claim 12. As illustrated in FIGs. 17 and 23, Kanazawa teaches individually addressable sustain electrodes (X1 to Xn) that are not split into a first group and second group connected to a first and second of two second connecting points, respectively. Further, FIG. 5 of Kanazawa teaches that sustain electrodes 207 are all commonly connected to an output of a single X Common Driver 20. Consequently, Kanazawa also fails to teach or suggest a method for driving an AC plasma display that includes “applying a prescribed voltage to one of n scan electrodes; applying another prescribed voltage in common to two of m address electrodes connected to one of m/2 first connecting points; applying a first voltage to said first group; and applying a second voltage to said second group.” Further, Kanazawa fails to teach or suggest a desired discharge is caused to select an ON state in a first of n x m discharge cells that corresponds to “said one of said n scan electrodes, a first of said two of said m address electrodes connected to said one of said m/2 first connecting points and one of said plurality of sustain electrodes of said first group to which said first voltage is applied.”

Ryan describes a gas discharge display including address electrodes 36, Y axis electrodes 32, and shift electrodes 35 connected to receive shift signals from a generator 12 to shift the discharge from one shift cell to another in sequence along the addressing electrode.² Similarly, Nakayama describes a gas discharge device including a first electrode X1, a second electrode X2, a third electrode X3, and a Y electrode forming discharge cells that are driven to achieve a logical multiplying operation between external terminals and the electrodes by shifting a discharge spot across Y electrodes.³ The driving methods of Ryan and Nakayama enable these prior

² see Ryan at Column 5, line 17 through Column 6, line 17 and Column 11, line 60 through Column 12, line 7.

³ see Nakayama at Column 3, lines 51-63.

art devices to propagate discharges across a display. However, neither Ryan nor Nakayama teach or suggest a plurality of sustain electrodes including “a first group connected to a first of two second connecting points and a second group connected to a second of said two second connecting points,” or applying “a first voltage to said first group, and a second voltage to said second group.” Further, neither Ryan nor Nakayama teach or suggest a desired discharge is caused to select an ON state only in a first of $n \times m$ discharge cells that corresponds to “said one of said n scan electrodes, a first of said two of said m address electrodes connected to said one of said $m/2$ first connecting points and one of said plurality of sustain electrodes of said first group to which said first voltage is applied.”

Therefore, it is respectfully submitted that neither Ryan nor Nakayama, either alone or in any proper combination, cure the deficiencies as discussed above with respect to amended Claim 12.

Further, in the plasma displays of Ryan and Nakayama, commonly connected address electrodes are only possible because they are characterized in that only the next-in-series display element or cells that are driven to achieve a logical multiplying operation between external terminals is made capable of display. In contrast, by design, Kanazawa enables individual and independent addressing and discharge of discharge cells.⁴

In view of the above-noted difference in operating principles, Applicants respectfully submit that simply combining Ryan or Nakayama with Kanazawa would likely impair the function of Kanazawa's device. More specifically, by simply incorporating address electrodes with common connections to Kanazawa, persons skilled in the art would be concerned that the resultant device would likely be unable

⁴ see Kanazawa at Columns 1-7.

to uniquely address a single discharge cell. For example, merely coupling address electrodes in FIGs. 5, 17, and 23 of Kanazawa would result in the lighting of more than one discharge cell (at least one discharge cell per coupled address electrode) each time an address electrode is energized. Thus, the display of Kanazawa would no longer function desirably without additional modification of the structure and/or driving method of Kanazawa. None of the applied references teaches what modification would be further needed or even the need for making such a further modification.

The Kanazawa, Ryan, and Nakayama patents, therefore, do not provide the motivation to perform the proposed modification of the Kanazawa method of operating a plasma display device. In other words, an attempt to bring in the isolated teaching of Ryan and Nakayama into the Kanazawa method of operating a plasma display device would amount to improperly picking and choosing features from different references without regard to the teachings of the references as a whole.⁵ While the required evidence of motivation to combine need not come from the applied references themselves, the evidence must come from *somewhere* within the record.⁶ In this case, the record fails to support the proposed modification of the Kanazawa method of operating a plasma display device.

Furthermore, it is not clear from the record how the Ryan and Nakayama address electrodes could be incorporated into the device driven by the method of

⁵ See In re Ehrreich 590 F.2d 902, 200 USPQ 504 (CCPA, 1979) (stating that patentability must be addressed "in terms of what would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the sum of all the relevant teachings in the art, not in view of first one and then another of the isolated teachings in the art," and that one "must consider the entirety of the disclosure made by the references, and avoid combining them indiscriminately.")

⁶ In re Lee, 277 F.3d 1338, 1343-4, 61 USPQ2d 1430 (Fed. Cir. 2002) ("The factual inquiry whether to combine references ... must be based on objective evidence of record. ... [The] factual question of motivation ... cannot be resolved on subjective belief and unknown authority. ... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion").

Kanazawa since such modification would require a substantial reconstruction or redesign of the method of Kanazawa. More specifically, the substantial reconstruction or redesign would require selecting an ON state from discharge cells whose address lines are connected to each other. Further, there is no evidence that a person of ordinary skill in the art would be motivated to perform such changes and redesign.⁷

Therefore, it is respectfully submitted that none of the references, Kanazawa, Ryan, nor Nakayama, either alone or in any proper combination, teach or suggest a plurality of sustain electrodes including "a first group connected to a first of two second connecting points and a second group connected to a second of said two second connecting points;" applying a first voltage to said first group and a second voltage to said second group; or causing a desired discharge to select an ON state in a first of said $n \times m$ discharge cells that corresponds to "said one of said n scan electrodes, a first of two of said m address electrodes connected to said one of said $m/2$ first connecting points and one of said plurality of sustain electrodes of said first group to which said first voltage is applied." Accordingly, it is respectfully submitted that the rejection to Claim 12 under 35 U.S.C. §103(a) be withdrawn. Further, it is respectfully submitted that dependent Claims 13-18 are allowable at least because of their depending recitation of the above-identified features of amended Claim 12 from which Claims 13-18 depend. Likewise, it is respectfully submitted that new dependent Claim 19 is allowable based at least on its dependent recitation of the above-identified features of amended Claim 12.

⁷ See In re Ratti, 270 F.2d 810, 813, 123 USPQ 349, 352 (reversing an obviousness rejection where the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.")

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for formal allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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